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DUST AND FUME AS FOES OF INDUSTRY

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Diseases of occupation are the outcome of civilization. They owe their origin to the rise of chemistry, the invention of machinery, the massing of people, and the rise of the modern town. Apart from the mechanical injuries, the principal dangers of modern industry, are dust and fume.

The present day laborer, either in striving for a livelihood or in his ambition to earn more wages, does not stop to consider his own health or the health of his family; his own health by working in poorly ventilated factories, and the welfare of his wife and children by forcing them to live in localities where the atmosphere is filled with dust and smoke.

Dust and smoke have a great influence upon the mortality of a locality, especially in deaths from lung diseases. The mortality in country places is much less than in manufacturing communities. In localities where the relation of dust and smoke to tuberculosis has been very carefully studied, it has been found that the course of pulmonary tuberculosis has been hastened by smoky atmosphere, and that smoke predisposes to lung diseases.

The effect of street dust is very noticeable, by the fact that some years ago, in New York City, one-third of the street cleaners were affected with tuberculosis, notwithstanding the fact that each one of these men, before being employed, had been examined by a physician. The men on the east side of the city where the people were affected with nasal, pharyngeal, and pulmonary catarrh, suffered more than those on the west side where the districts were not so congested.

About a half century ago, the mortality of coal miners was extremely high, but since the invention of a double draft for ventilating, mining has become a comparatively healthy occupation, except for the bad influence of the air laden with coal dust, and for the danger of explosions.

The most dangerous of the poisonous dusts are arsenic and lead. One of the most harmful of the arsenical trades is the manufacture of wall paper. Arsenic is also used in the printing of cretonnes and the making of artificial flowers. White arsenic is used in taxidermy. Different forms of arsenic are used in almost an endless number of processes in manufacturing. The symptoms of arsenic poisoning may be acute or chronic, but are usually chronic, and the workmen suffer from

eczematous sores and chronic ulcers, gastro-intestinal disorders and paralysis.

Lead is very important in its effect upon industrial life, because of the great variety of ways in which it is used. Among the occupations in which it is necessary are the making of white and red lead, the glazing of many kinds of paper, type founding and setting, glass cutting and polishing, dyeing and printing, plumbing and painting. In some of the cases of poisoning, the lead gains access by inhalation, but in others by ingestion, carried to the mouth by soiled fingers. If more attention were paid to personal hygiene doubtless a smaller number would suffer from colic and paralysis, a condition shown by the fact that women, being more careful, are less liable to poisoning than men. The symptoms of chronic lead poisoning are colic, a sweetish, metallic taste in the mouth, the deposition of a bluish line along the base of the teeth, and drop wrist, or paralysis of the extensors of the fingers and the hand.

The occupations known as the offensive trades, such as soap making, glue making, bone boiling, and the manufacturing of fertilizers are not only a menace to the workmen themselves but if not kept under close supervision become a nuisance to the community. In spite of the dangers of infection, and unsanitary surroundings, the average age of the men working in these places, at death, is high.

The irritating gases are: ammonia, chlorine, sulphur, dioxide, hydrochloric and nitric acid fumes. At first these cause no particular discomfort but a slight tickling cough, but in large amounts or for a long space of time they cause severe chronic and acute catarrhal conditions. Among workmen who use bleaching powders, or work in chlorine fumes, bronchitis, asthma, and caries of the teeth often occur. Sulphur dioxide which is evolved in smelting ores is used in the manufacturing of sulphuric acid, and bleaching. In small doses it causes but a slight cough, and persons working in it continuously have a tolerance for large quantities. Its effects are more lasting on the digestive than on the respiratory system. Bromine has a marked effect upon the respiratory tract and men suffering from any lung trouble should not be allowed to work in its fumes. Carbon monoxide is one of the most important of the poisonous fumes and is given off in many manufacturing operations, usually in connection with some other gases.

The constant inhalation of even small doses of this vapor causes disturbances of the digestive function, general weakening of the system and diminished mental powers. Carbon bisulphide is used as a solvent for india rubber, and workers in this are subject to vertigo, epileptiform convulsions and pains in the extremities. Rest from

occupation usually clears up the condition. Phosphorus vapors in former years were a great problem in the manufacture of matches, but since the use of amorphous sulphur has been established, the trade is not so dangerous.

The trade of metal grinding has been greatly improved by the modern invention of a special apparatus for carrying off the dust and by the prohibition of dry grinding. This dust produces an irritation of the mucous membranes of the nose and causes boils. A certain degree of tolerance to the dust may be established, but the nasal processes become atrophied. The feeling of dryness in the throat gives rise to the ingestion of large amounts of alcoholics among the workers. Rheumatic diseases are very common. Cleanliness to a high degree and breathing through the nose are very important in these industries.

The shortening of the working day and pauses in the work so as to enable the men to spend a short time in an atmosphere free from dust have been recommended in all industries where dust and fume are evolved. The ten-hour day for men and the eight-hour day for youths have been strongly advocated.

Almost all cases of industrial disease could be aided if more attention were paid to personal hygiene, both in the home and in the factory, and if the working people would understand the value of out-door exercise there would be very little difference noted in the health of persons working at different occupations, and the expression "occupational diseases" would lose its significance.

ACUTE PULMONARY TUBERCULOSIS

By JOHN B. HUBER, A.M., M.D.

(Continued from page 30)

PART II

II. ACUTE PULMONARY MILIARY TUBERCULOSIS

Here the miliary tubercles are in the main confined to the tissues of the lungs and pleura; and the infection is certainly in most cases hematogenous.

Etiology. In children there may have been a history of an acute infection, such as pertussis or measles; or of some pulmonary or pleural affection. In adults we search for the history of a latent tuberculosis, or of a preëxisting focus, perhaps apical.

The pathology. There may be a tubercular nodule in the course of the intestinal lacteals which are drained by the thoracic duct; or